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# NEW MEANS

FOR MAKING

EXTENSION AND COUNTER-EXTENSION

IN

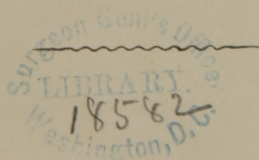
FRACTURES OF THE LEG AND THIGH.

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BY JOHN NEILL, M.D.,

PROFESSOR OF SURGERY IN THE PENNSYLVANIA COLLEGE, SURGEON

TO THE PENNSYLVANIA AND PHILADELPHIA HOSPITALS.



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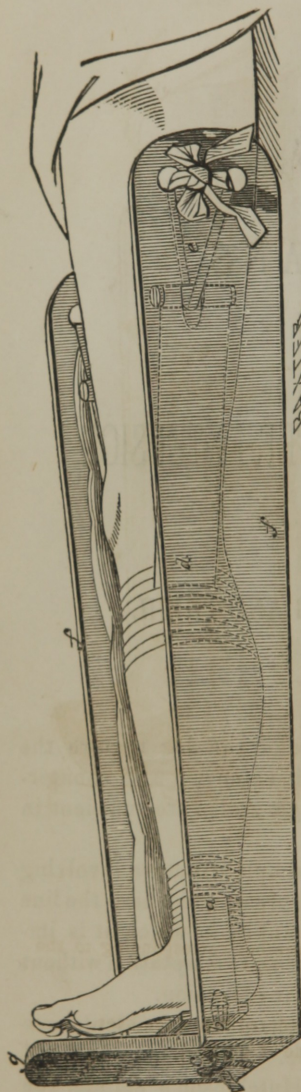
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Comparatively few cases of fracture of the leg require the employment of any apparatus by which extension and counter-extension are effected. Simple means generally are sufficient in ordinary cases.

There are, however, some cases of simple fracture involving both bones, where the violence has been great, and where the line of fracture is very oblique, or near the ankle, in which it is impossible to maintain the fragments in accurate adaptation without resort to some means effecting permanent extension.

To accomplish this end various mechanical expedients are employed with results equally variable. The double inclined plane and its various modifications, Hutchinson's splints, the ordinary fracture-box, with the addition of the long splint of Desault for fracture of the thigh, together with many numerous patented machines, are the contrivances generally used.

FIG. 1.



I need only appeal to the experience of those under whose care many such cases occur, to the numerous deformities in every extensive cabinet, and to the great ingenuity which has been displayed in this department of mechanical surgery, to establish the truth that there is a desideratum in the treatment of this fracture.

In endeavoring to supply this deficiency, I have resorted to a contrivance which I think is simple and effective, and which I believe to be novel, not only in its details, but in its principle.

For simple fractures of both bones of the leg, attended with shortening and deformity not easily overcome, the limb should be placed in a long fracture-box, with sides extending as high as the middle of the thigh, and a pillow should be used for compresses.

The counter-extension is made by strips of adhesive plaster one and a half inches in breadth, secured on each side of the leg below the knee and above the seat of fracture, by narrower strips of plaster applied circularly. The end of the counter-extending strips may then be secured to holes in the upper end of the sides of the fracture-box, by which the *line of the counter-extension is rendered nearly parallel with the limb.*

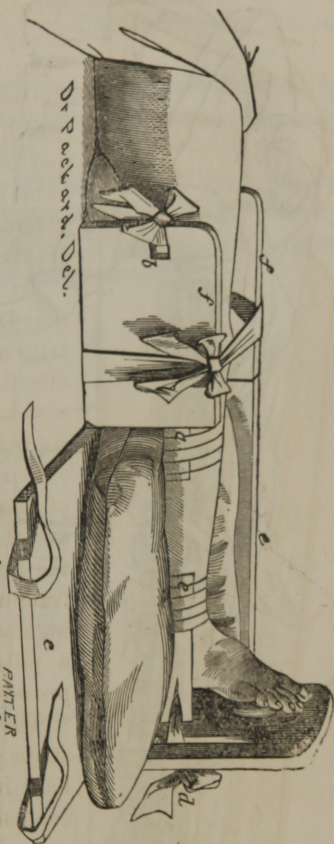
EXPLANATION OF FIG. 1.—*f. f.* The sides of the fracture-box. *g.* The foot-board.—*d.* Counter extending strip of adhesive plaster. *e.* Loop of bandage securing the counter-extending band to the holes in the upper end of the box. *a.* Extending band of adhesive plaster. *b.* A small block wider than the foot to prevent pressure on the malleoli. *c.* Loop of bandage tied to the foot-board maintaining the extension

The extension is also to be made by adhesive strips in a mode which is now well known and understood. The ends of the extending bands may be fastened to the foot-board of the box.

In compound fractures of the leg, shortening and deformity are often difficult to overcome, as is well known to experienced surgeons. In such cases we may wish to dress the wounded soft parts, and at the same time maintain a certain amount of extension and counter-extension.

This can be readily accomplished by having the sides of the fracture-box sawed in two parts at the knee, so that the sides of the box above the knee, from the upper ends of which the counter-extension is made, need not be disturbed during the dressing, while that portion of the side of the box corresponding to the leg may be opened at pleasure, without diminishing the tension of the extending or counter-extending bands.

FIG. 2.



EXPLANATION OF FIG. 2.—*f. f.* Sides of the fracture-box corresponding to the thigh.

*e. e.* Sides of the same corresponding to the leg.

*a.* Counter-extending band of adhesive plaster secured below the knee.

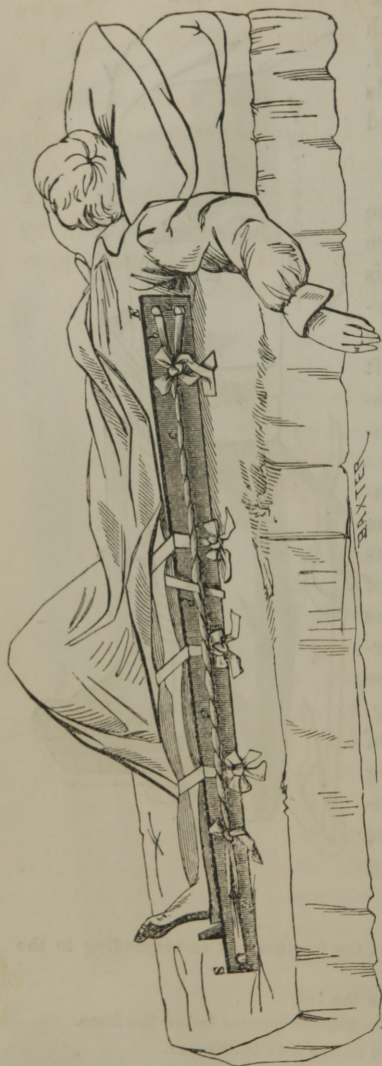
*b.* The same fastened to the upper end of the side of the box.

*c.* The extending adhesive strip.

*d.* The same secured to the foot-board.

In connection with the above apparatus, I may take this opportunity to suggest a new and easy mode of gradually increasing

FIG. 3.



the tension force in machines which may be applied either to fractures of the thigh or to the leg.

The object is often obtained by simply tying the ends of the extending and counter-extending bands to the extremities of the splint, or where it is found difficult to maintain the desired degree of tension, by screws and ratchets of various forms applied to the ordinary splints. The improvement consists in making the extension and counter-extension in a *continuous line*, and of a simple means of gradually and powerfully increasing the force.

To illustrate this application, take, for instance, a case of fracture of the thigh, in which a Physick's Desault has been applied in the usual way. Instead of securing the extremities of the counter-extending perineal band to the two holes in the upper end of the splint, and the extremities of the extending band to the hole in the lower end of the splint, let these bands be carried through their respective holes and secured

EXPLANATION OF FIG. 3.—*E. S.* External splint of Physick's Desault. *b* Counter-extending band. *a*. Holes in the upper end of the splint. *g*. Extending band. *c. c.* An inelastic band or cord connecting the extending or counter-extending band. *d*. A stock by which *c. c.* is twisted.

to each other about the middle of the outer splint. Thus we make the extension increase the counter-extension, and the reverse.

At the same time, by *simply twisting these united bands by a small stick*, we can increase and maintain the power as effectually as by the most complicated apparatus.

In simplicity and in power, this arrangement of the bands resembles the Spanish windlass or temporary tourniquet, made by a handkerchief and stick. Its operation is upon the same principle as Gilbert's Twisted Rope for Dislocation.



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